

CONTRIBUTIONS TO THE KNOWLEDGE OF THE GENERA
CYPRÆA AND *TRIVIA*.

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(Communicated and edited by H. O. N. Shaw, F.Z.S.)

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I. NOTES ON THE NOMENCLATURE OF SOME SPECIES.

IN former years authors did not always strictly follow the rules of nomenclature and the laws of priority, which has caused recent workers much trouble and confusion.

Linnæus (1758, Syst. Nat., 10th ed.) is the beginning of the binomial system.

Lamarck (1810, Ann. du Mus., xvi, p. 92), to quote only one case, called a species *C. rufa* (sp. nov.), and added *C. pyrum*, Gmel. (1790), as a synonym.

Gray (1824-28, Zool. Journ., i, iii, and iv) gave the name *Cypræa diluviana* to a "new" species, though he knew that its var. *minor* was identical with *C. fabagina*, Lam. (1810), and he unhesitatingly used *C. cervina*, Lam. (1810), and *physis*, Broc. (1814), as specific names, and *C. cervus*, Linn. (1771), and *pyrulâ*, Lam. (1810), as synonyms; but the same author (1824, op. cit., i, p. 380) changed the name *Cypræa pulchella* given by himself to a new species (1824, op. cit., i, p. 143) into *C. pulchra*, finding the former word pre-occupied by Swainson (1823) for another species, and he recognized (1828, op. cit., iv, p. 66, etc.) that *C. princeps*, *gibbosa* (both are called by him sp. nov.), and *melanostoma*, Sow., must be named *C. valentia*, Perry, *leporina*, Lam., and *camelopardalis*, Perry, which are prior names, but little known at that time.

Gray knew that the name *Cypræa similis* had been used by Gmelin (1790) for a species considered by him (1828, op. cit., iv, p. 85) as a synonym of *C. erosa*, Linn.; but three years later (1831, Zool. Miscel., p. 36), he called another species *Cypræa similis*, and this name was accepted by all following writers till 1909!

It must also be borne in mind that conchologists occupied only with the study of recent shells did not trouble about specific names given by palæontologists, and vice versa.

Many authors did not examine the original descriptions, but copied errors from the previous writers, and thus the word *californica*, erroneously printed in Sowerby's "Conchological Illustrations" (1832) instead of *californiana*, Gray (1827, op. cit., iii, p. 365), was adopted by all writers (except Carpenter in 1872) to Hidalgo (1906). All authors since Dillwyn (1817) were of opinion that *Cypræa cruenta*, Gmel., which evidently belongs to a variety of *C. erronea*, Linn., is the same species as *variolaria*, Lam., which opinion has been corrected by Martens (1879), Weinkauff (1881), and then again by Hidalgo (1906), for Roberts (1885) had renewed the false synonymy.

The frequent change of a specific name by the authors of the nineteenth century may be illustrated by the following example: the famous Orange-Cowry was called *Cypræa aurantium* by Martyn (1789), Gmelin (1790), Reeve (1845), Jay (1850), Roberts (1885), Melvill (1888), Dautzenberg (1902), and Hidalgo (1906); *C. aurantia* by Roberts (1870), Garrett (1879), and Rossiter (1882); *C. aurantiaca* by Simroth (1907), and *C. aurora* by Chemnitz (1795, as of Solander), Lamarck (1810, 1822), Dillwyn (1817), Gray (1824), Sowerby (1825, 1837), Deshayes (1830, 1844), Donovan (1834), Reeve (1842), Chenu (1844, 1847), Kiener (1845), Adams (1858), Sowerby (1870), Weinkauff (1881), and Paetel (1887). The first is correct, the others are synonyms. The interesting change of the names *arctica*, *europæa*, *coccinella*, and *pediculus*, given to the common European *Trivia*, can be looked up in Dautzenberg and Fischer (1912, Rés. camp. scient. Albert de Monaco, xxxvii, pp. 160-5).

Deshayes (1844, Anim. sans. vert., 2nd ed., pp. 480, etc.) changed his *Cypræa* (now *Trivia*) *lamarckii* into *pedicularis*, being preoccupied by Gray, and published on pp. 501 and 504 interesting remarks on the invalidity of names given only in manuscript works or preoccupied by older homonyms.

Reeve (1845, Conch. Icon., *Cypræa*, spec. 65) changed *C. undata*, Lam. nec Chem., into *diluculum*, nov. nom.; the latter name must undoubtedly stand, though one cannot approve of Reeve's arguments: *C. undata*, Chem., is not valid, and Gmelin cited it as *C. undulata*. Lamarck first described (1810) *C. zigzag*, Linn., as *undata*, and *undata* (= *diluculum*) as *zigzag*; in a following work (1822) he exchanged the two names.

Mörch (1852, Catal. Conch. Yoldi, p. 113, etc.) proposed the following changes:—

<i>Cypræa amarata</i> , Meusch. (1787) nomen pro <i>C. scurra</i> , Gmel. (1790).	
„ <i>arlequina</i> , Chem. (1788)	„ <i>histrio</i> , Gmel. (1790).
„ <i>succincta</i> , Linn. (1758)	„ <i>cinerea</i> , Gmel. (1790).
„ <i>pardus</i> , Bolten (1798)	„ <i>pantherina</i> , Dill. (1817).
„ <i>crenata</i> , Bolten (1798)	„ <i>variolaria</i> , Lam. (1810).

All these names must be refused; *amarata* and *arlequina* are created by invalid authors, *succincta* is a variety of *C. onyx*, as Hanley (1855) showed, and the two species named by Bolten contain also *C. tigris*, Linn., and *caurica*, Linn.

Orbigny (1852, Prodr. Paléont., iii) changed the names of some fossil species as preoccupied by recent ones: *Cypræa ambigua*, Grat., *atomaria*, Grat., *ovum*, Grat., etc., were called *C. subambigua*, *subatomaria*, *subovum*, etc. Bayan (1870, Études faites École d. Mines, i, p. 57) did the same: *Cypræa jousseumei*, nov. nom. pro *marginata*, Fuchs nec Gask.

Roberts (1870, Amer. Journ. Conch., v, App., p. 189, etc.) tried to show that the ancient names given by Rumphius (1705), *Porcellana montosa*, *salita*, etc., must be used instead of the names given by Linnæus, and Brazier (1881, Proc. Linn. Soc. New South

Wales, v, pp. 502 and 503) approved of it. Roberts also changed *Trivia sulcata*, Gask. nec Dill., into *T. gaskoinii*.

Weinkauff (1881, Syst. Conch. Cab., v, 3) did not cite Roberts' catalogue, and omitted many names in his monograph, such as *C. annæ*, *fuscumaculata*, *helencæ*, *semiplota*, *spadix*, *venusta*, etc. Other words are written incorrectly (*pellicula*, *cicatricosa*); he "corrected" some specific names (*costatopunctata*, *sauiiæ*), but left valid prior names as synonyms of later ones, as *C. aurora*, Sol. nomen pro *aurantium*, Martyn, *melanostoma*, Sow., n.p. *camelopardalis*, Perry, *princeps*, Gray, n.p. *valentia*, Perry, *T. tremeza*, Ducl., n.p. *exigua*, Gray, etc. His greatest merit lies in his having pointed out that *C. teres*, Gmel., is not the slender species called *subteres* nov. by himself, but = *tabescens*, Gray nec Dill. (cf. Zool. Journ., iii (1827), p. 316, and Proc. Malac. Soc. London, viii (1909), p. 304).

The next monographer, Roberts (1885, in Tryon, Man. of Conch., vii, p. 153, etc.), also omitted some varietal names (*consobrina* and *propinqua*, Garrett, 1879; *aberrans* and *rouxi*, Ancey, 1882; *alveolus*, Tapparone, 1882), but paid more attention to the rules of nomenclature. The following specific names used by Weinkauff are changed by Roberts. In these notes the proposed changes when in brackets have, in their turn, been turned down by later authors.

<i>C. (adelincæ</i> nov.)	n.p. <i>fuscumaculata</i> , Sow. (1870) nec Pease (1868).
„ <i>aurantium</i> , Martyn (1789)	n.p. <i>aurora</i> (Sol.), Lam. (1810).
„ <i>camelopardalis</i> , Perry (1811)	n.p. <i>melanostoma</i> (Leathes), Sow. (1825).
„ (<i>tabescens</i> , Dill., 1817)	n.p. <i>teres</i> , Gmel. (1790; as of Weinkauff, 1881).
„ (<i>teres</i> , Gmel., 1790)	n.p. <i>subteres</i> , Weink. (1881).
„ <i>venusta</i> , Sow. (1847)	n.p. <i>thatcheri</i> , Cox (1869).
<i>T. insecta</i> , Migh. (1845)	n.p. <i>hordacea</i> , Kien. (1845).
„ (<i>sulcata</i> , Gask., 1848)	n.p. <i>gaskoinii</i> , Rob. (1870).

Roberts left *C. macula*, Angas, *princeps*, Gray, *undata*, Lam., *T. europæa*, Montg., and other names, and refused those given by Rumphius (1705), beginning the valid names with Linnæus, 1767 (not 1758!).

Melville (1888, Mem. Proc. Manchester Lit. Phil. Soc., (4) i, p. 184, etc.) recommended the following changes:—

<i>C. diluculum</i> , Reeve (1845)	n.p. <i>undata</i> , Lam. (1822).
„ (<i>honoluluensis</i> , nov.)	n.p. <i>madagascariensis</i> , Gmel. (1790).
„ (<i>ovata</i> , Perry, 1811)	n.p. <i>turdus</i> , Lam. (1810, Melville stated 1822).
„ <i>valentia</i> , Perry (1811)	n.p. <i>princeps</i> , Gray (1824).

Sacco (1894, Moll. terr. terz. del Piemonte, xv) wanted to establish the following:—

<i>C. achatidea</i> , Sow. (1837)	n.p. <i>physis</i> , Broc. (1814; only the recent specimens).
„ (<i>flavicula</i> , Lam., 1810)	n.p. <i>elongata</i> , Broc. (1814).
„ (<i>minor</i> , Grat., 1845)	n.p. <i>ovum</i> , Grat. (1845), <i>subovum</i> , Orb. (1852).
„ <i>utriculata</i> , Lam. (1810)	n.p. <i>physis</i> , Broc. (1814; the fossil specimens).
<i>T. (lamarckii</i> , Desh., 1836)	n.p. <i>pedicularis</i> , Desh. (1844).

He adopted *subatomaria*, Orb., *jousseauinei*, Bayan, etc., as specific names, but thought that *Trivia grayi*, Mich., *subrostrata*, Gray, etc., might be left, since *Trivia* was separated as a distinct genus. Sacco also changed the subgenus *Tigris*, Troschel (1863), into *Vulgusella*, Jous. (1884), but without cause. Linnæus used *Tigris* for a genus of *Mammalia* in 1735, but in 1758 it had only specific rank; therefore the genus *Tigris* is not cited by Sherborn (1902, Index Animal., i, p. 977), and cannot be regarded as valid. *Tigris*, Klein (1753), a genus of mollusca (cf. Agassiz, 1848, Index universalis, p. 1070), is likewise not valid.

Cossmann gave new names to fossil species preoccupied by previous authors. In 1896 (Feuille de jeunes naturalistes (3), xxvi, p. 1) he changed *Basterotia*, Jous. (1884) nec Hoern. (1859), into *Cavicypræa*, nov. subg., and in 1903 (Essais paléococh. comp., v, p. 143, etc.) he proposed the following:—

<i>C. (polysarca)</i> , nov.)	n.p. <i>gibbosa</i> , Borson (1820) nec Linn. (?)
„ <i>tatei</i> , nov.	n.p. <i>amygdalina</i> , Tate (1890) nec Grat. (1845).
„ <i>ventripotens</i> , nov.	n.p. <i>pinguis</i> , Conr. (1855) nec Mich. (1838).

He separated *C. flavicula*, Lam., from *elongata*, Broc., and called the fossil *Trivia*, *pedicularis* and not *lamarckii*.

Hidalgo (1906-7), in his classical "Monographia del Género *Cypræa*" (Mem. R. Acad. Cienc. Madrid, xxv), published many changes of specific names, some of which are challenged by various writers. Hidalgo believed the not strictly binominal Meuschen to be valid, and also incorrectly interpreted some of the oldest descriptions. The names changed by him are as follows:—

<i>C. (amarata)</i> , Meusch., 1787	n.p. <i>scurra</i> , Gmel. (1790).
„ <i>chinensis</i> , Gmel. (1790)	n.p. <i>cruenta</i> , Dill. (1817) nec Gmel. (1790).
„ (<i>dautzenbergi</i> , nov.)	n.p. <i>fuscomaculata</i> , Pease (1868 nec 1865).
„ (<i>fragilioides</i> , Meusch., 1778)	n.p. <i>cinerea</i> , Gmel. (1790).
„ <i>fuscomaculata</i> , Pease (1865)	n.p. <i>adelinæ</i> , Rob. (1885).
„ <i>gillei</i> , Jous. (1893)	n.p. <i>intermedia</i> , Redf. (1847) nec Kien. (1845).
„ (<i>hirundo</i> , Linn., 1758)	n.p. <i>neglecta</i> , Sow. (1837).
„ (<i>kieneri</i> , nov.)	n.p. <i>hirundo</i> , Sow. (1837) nec Linn. (1758).
„ (<i>melvilli</i> , nov.)	n.p. <i>ursellus</i> , Kien. (1845) nec Gmel. (1790).
„ <i>notata</i> , Gill (1858)	n.p. <i>macula</i> , Angas (1867).
„ (<i>errones</i> , var.) <i>ovum</i> , Gm. (1790)	n.p. <i>sophiæ</i> , Braz. (1876).
„ (<i>punctulata</i> , Gmel., 1790)	n.p. <i>tabescens</i> , Dill. (1817).
„ <i>robertsi</i> , nov.	n.p. <i>punctulata</i> , Gray (1824) nec Gmel. (1790).
„ <i>turdus</i> , Lam. (1810)	n.p. <i>ovata</i> , Perry (1811).
„ <i>vinosa</i> , Gmel. (1790)	n.p. <i>pantherina</i> , Dill. (1817).
<i>T. arctica</i> , Pult. (1799)	n.p. <i>europæa</i> , Montg. (1808).
„ <i>californiana</i> , Gray (1827)	n.p. <i>californica</i> , Sow. (1832 as of Gray).

But he, again, left names for later writers to change.

Dall (1909, *The Nautilus*, xxii, p. 125) changed *Cypræa sowerbyi*, Kien. (1845) nec Ant. (1839), into *C. annetteæ*, nov.

Shaw (1909, *Proc. Mal. Soc. London*, viii, p. 288, etc.) examined the validity of some authors in an excellent revision of the genera *Cypræa* and *Trivia*, and he also proposed many changes of names, as follows:—

<i>C. cinerea</i> , Gmel. (1790)	n.p. <i>fragiloides</i> , Meusch. (1778).
„ <i>friendii</i> , Gray (1831)	n.p. <i>scottii</i> , Brod. (1831) (Menke in 1847 recognized the priority of the former).
„ <i>fuscumaculata</i> , Pease (1865 and 1868)	n.p. <i>dautzenbergi</i> , Hid. (1907).
„ <i>fuscobruva</i> , nov.	n.p. <i>similis</i> , Gray (1831) nec Gmel. (1790).
„ <i>gambiensis</i> , nov.	n.p. <i>nebulosa</i> , Kien. (1845) nec Gmel. (1790) (Taylor neglected this change in 1913).
„ <i>hidalgoi</i> , nov.	n.p. <i>leucostoma</i> , Gask. (1843) nec Gmel. (1790).
„ <i>hirundo</i> , Linn. (1758)	n.p. <i>kieneri</i> , Hid. (1906).
„ <i>neglecta</i> , Sow. (1832)	n.p. <i>hirundo</i> , Hid. (1906) nec Linn. (1758).
„ (<i>obtusa</i> , Perry, 1811)	n.p. <i>pantherina</i> , Dill. (1817).
„ (<i>prestoni</i> , nov.)	n.p. <i>interrupta</i> , Gray (1824) nec Bolten (1798).
„ <i>scurra</i> , Gmel. (1790)	n.p. <i>amarata</i> , Meusch. (1787).
„ <i>subteres</i> , Weink. (1881)	n.p. <i>teres</i> , Sow. (1832) nec Gmel. (1790).
„ <i>teres</i> , Gmel. (1790)	n.p. <i>punctulata</i> , Hid. (1906) nec Gmel. (1790), <i>tabescens</i> , Gray (1824).
„ (<i>variolaria</i> , Lam., 1810)	n.p. <i>chinensis</i> , Hid. (1906) vix Gmel. (1790).
„ <i>zonaria</i> , Gmel. (1790)	n.p. <i>zonata</i> , Chemn. (1788).
<i>T. aperta</i> , Swains. (1822)	n.p. <i>oniscus</i> , Lam. (1810) nec Bolten (1798).
„ <i>corinneæ</i> , nov.	n.p. <i>affinis</i> , Marr. (1867) nec Duj. (1837).
„ <i>edgari</i> , nov.	n.p. <i>grando</i> , Gask. (1848) nec Potiez (1838).
„ <i>gaskoinii</i> , Rob. (1870)	n.p. <i>sulcata</i> , Gask. (1848) nec Dill. (1817).
„ <i>lathyrus</i> , Blainv. (1826)	n.p. <i>pulex</i> , Gray (1827).
Subg. <i>Monetaria</i> , Trosch. (1863)	n.p. <i>Aricia</i> (Gray), Adams (1858) nec Savigny (1817), etc. See also op. cit., x (1912), p. 26.

Iredale (1916, *Proc. Mal. Soc. London*, xii, p. 93) changed *C. umbilicata*, Sow. (1825), into *hesitata*, nov., but Verco (1918, *Trans. Proc. R.S. South Austr.*, xlii, p. 148) pointed out that the unfortunately chosen name *armeniaca* (= an apricot, not ex Armenia!) given by himself (1912, op. cit., xxxvi, p. 211) to a variety must be applied to the species.

Hedley and Hidalgo (1907) described a *Trivia* from Australia as a survival of the fossil *avellanoides*, MacCoy. In 1918 (*Proc. R. Soc. New South Wales*, li) the former recognized it to be distinct, and called the recent species *T. cælatura*, nov.

Having been occupied these last few years with the study of

the genera *Cypræa* and *Trivia*, and whilst preparing a catalogue containing all species, varieties, and synonyms, recent as well as fossil, and the interpretations given to them by the various authors, I have found many names which require changing either on account of older homonyms, omitted by previous authors, or from other reasons. All these changes are included in this paper, and I shall treat them in alphabetical order as Shaw did, for no really satisfactory system of grouping has so far been found.

I propose the six following new names, my reasons for so doing will be found in the notes on the names by which the species are now known:—

<i>C. dillwyni</i>	nov. nom. pro	<i>C. margarita</i> , Gray.
„ <i>liliputana</i>	„	<i>T. scabriuscula</i> , Koenen.
„ <i>massauensis</i>	„	<i>C. gemmula</i> , Weink.
<i>T. antillarum</i>	„	<i>T. subrostrata</i> , Gray.
„ <i>nix</i>	„	„ <i>nivea</i> , Sow.
„ <i>occidentalis</i>	„	„ <i>pulla</i> , Gask.

CYPRÆA ANNULATA, Gray (1828).

Hidalgo (1906, Mon. gén. *Cypræa*, pp. 24 and 146) says that *Cypræa annulus*, Linn., is figured in the “Encyclopædia Metropolitana” (1810) on tab. xiv under the name *C. annulata*. If this name be regarded as a valid synonym, *C. annulata*, Gray, should then receive a new name, for there is no synonym nor varietal name to supply it.

CYPRÆA CAMELOPARDALIS, Perry (1811).

Sowerby and Vigors (1828, Zool. Journ., iii, p. 315; iv, pp. 218–20) contested the validity of Perry’s “Conchology”, for the author gave many superfluous names to species already described by previous writers. It is now generally admitted that the names given by Perry must be accepted.

CYPRÆA CINEREA, Gmelin (1790), and CITRINA, Gray (1825).

The names of these species must not be changed, for *cinerea*, Meuschen (1787, = ?), and *citrina*, Humphreys (1797, = *cicercula*, Linn.), since neither author is accepted as valid (*vide* Shaw, Proc. Malac. Soc., 1909, p. 292).

CYPRÆA DESHAYESII, Binkhorst (1861).

This name (Monogr. Gastr. Ceph. du Limbourg, p. 17) was pre-occupied by Gray (1828, Zool. Journ., iv, p. 83), whose *Cypræa deshayesii* is now considered as a *Gisortia*; the name given by Binkhorst must therefore be changed into *C. strombecki*, Kaunhowen (1898, Paläont. Abhandl., Neue Folge, iv, pars. i, p. 75).

Cypræa deshayesiana, Rouault (1848, Bull. Soc. Geol. France, (2) v, p. 207), was afterwards changed by its author (1848, Mem. Soc. Geol. France, (2) iii, p. 501) into *C. koninckii*; the former being a *nomen nudum*, there is no doubt that *koninckii* is the valid name of the species.

* No *cinerea* in the *Zoophylacium*, 1781,

I do not propose to use the word *hoernesiana* for designating *Cypræa globosa*, Duj.

CYPRÆA ELONGATA, Brocchi (1814).

This name, given by Brocchi, was preoccupied by Perry (1811, = *C. caurica* var.). *Cypræa flavicula*, Lam. (1810), was identified by Cocconi (1873), Sacco (1894), and Cerulli (1911), who added " *elongata* ? ". Sacco only used this name for designating the species from the Italian Miocene. Being a species from the French Oligocene, *flavicula* cannot be identical with *elongata*. Cossmann (1903) and many previous authors have separated the two. *Cypræa subelongata*, Orb. (1852), also scarcely belongs to *elongata* (cf. Sacco, 1894, pp. 21, 31, 32). Therefore Brocchi's species must be changed into *Cypræa longiscata*, Mayer (1875, Journ. de Conch., xxiii, p. 66).

CYPRÆA ERRONES, Linnæus (1758).

The name given by Linnæus (1758, Syst. Nat., 10th ed., p. 723) is not, as Dunker (1852) believed, a typographical error; for it is printed in the same way by Linnæus in 1764 (Mus. Lud. Ulr.) and 1767 (Syst. Nat., 12th ed.). If it were only an error, the name ought to be changed into the more classical form *erronea*, which name is published for the first time by Müller (1775, Des C. v. Linné Natursystem, vi) and then by Born (1780), Schröter (1783), Sowerby (1825), Menke (1843), Mörch (1852), Schaufuss (1869), all of whom give *erronea* specific rank instead of *errones*.

CYPRÆA EXANTHEMA, Linnæus (1767).

Lamarck (1810) recognized that *Cypræa zebra*, Linnæus (1758, Syst. Nat., 10th ed., p. 719), was a young shell of *C. exanthema*, Linnæus (1767, op. cit., 12th ed., p. 1172), and Hanley (1855) confirmed it. This common West Indian species must therefore be called *Cypræa zebra*, Linn.

CYPRÆA FABAGINA, Lamarck, var. BROCCHII, Desh. (1844), etc.

It is obviously permissible to correct the names *brochii*, Desh. (1844, = *fabagina*, Lam., var.), *gratteloupi*, Orb. (1852, = ? *flavicula*, Lam., var.), and *orbigniana*, Grat. (1845), into *brocchii*, *grateloupi*, and *orbignyana*, i.e. in the same way as these names were written by their owners. Certain writers have already done so, but without drawing attention to their changes.

Many Latin names as originally given are not strictly correct, and writers from Michelotti (1846) to Vredenburg (1919) on purpose always wrote *pirum piriformis* instead of *pyrum pyriformis*. If these philological quibbles are to be upheld, which I do not think should apply to Latin descriptive names, then many other names should be changed, for instance, *annulus* and *annularia* into *anulus* and *annularia*, etc.; and perhaps a future writer will discover some new name for this genus. The more correct classical spelling *Cypria*, as pointed out by Jeffreys (1867) and Melvill (1888), has

been used by Simroth (1910, *Deutsche Südp. Exped.*, xii, part iii, p. 158) for another genus of mollusca.

Corrections made by an author to the name given by himself should only be accepted if they were published, at the same time as the wrongly written name, as "errata", but not afterwards. *Pantherinaria*, Sacco (1894, p. 67), has to stand, not *Panterinaria* (op. cit., p. 10), also *childreni*, Gray (1825, *Zool. Journ.*, i, p. 603), not *childrini* (op. cit., p. 518), etc.; and Lamarck had no right to change in 1822 his own *Trivia ovulata* (1810) into *T. ovula* (cf. Shaw, 1909, p. 312).

CYPRÆA GANGRANOSA (Solander MSS.), Dillwyn (1817).

Most authors wrote *gangrenosa*, Roberts (1885, in the index, p. 215), and Shaw (1909) *gangrænosa*; but Dillwyn (1817, *Descr. Cat.*, pp. 462 and 465) wrote *gangranosa* three times, which spelling must be retained.

I may here add that the following names must be written *Cypræa saulæ*, Gask. (1843), *sophia* (Bernay), Desh. (1866) (not to be confounded with *sophiæ*, Braz., 1876 = *ovum*, Gmel.), *Trivia maugeri*, Gray (1832), and the subgenus *Bernaya*, Jous. (1884), and not *saulicæ*, *saulii*, *sophiæ*, *maugericæ*, *maugercæ*, and *Bernayia*, auctt.

CYPRÆA GEMMULA, Weinkauff (1881).

Gould (1845, *Proc. Boston Soc. Nat. Hist.*, ii, p. 27) described a *Cypræa gemmula*, which is a synonym of *Trivia exigua*, Gray. Weinkauff (1881, p. 163) was aware of this; nevertheless, he gave the same name to another species closely allied to the West American *C. arabicula* (1881, p. 54). There are no synonyms or varietal names; therefore I propose *Cypræa massauensis*, n. sp., nov. nom., for the species inhabiting the Red Sea and western part of the Indian Ocean.

CYPRÆA GIBBOSA, Borson (1820).

Cossmann (1903, p. 154) substituted the name *polysarca*, nov. nom., for this species, believing *gibbosa* to be preoccupied by Linnæus. But *gibbosa*, Linn. (1758), is described by Linnæus, Gmelin, and Dillwyn as a *Bulla*, by Lamarck as an *Ovula*, and never as *Cypræa* (now it is considered as *Cyphoma*). *Cypræa gibbosa* (Schröter), Schmidt (1818, *Versuch beste Einrichtung Conch. Samml.*, p. 220), which was not known to Cossmann, is only a *nomen nudum*, and also does not touch the validity of the name given by Borson, which must be used for the species belonging to the subgenus *Mandolina*. Cossmann, at all events, had no right to give a new name, for at least two of the varietal names given by Sacco (1894, *mucronatoides* and *pergibba*) could have been used for designating the species.

CYPRÆA GLOBOSA, Dujardin (1837).

Cypræa globosa, Sow., now considered a *Trivia*, was described in 1832 (*Conch. Illustr.*, fig. 34); therefore the fossil species

described by Dujardin must receive another name. I propose *parvodenticulata*, Sacco (1894, p. 15), because this variety is common in some parts of France whence Dujardin received his types. I prefer it to *hoernesiana*, Sacco, which is named after a figure drawn by Hoernes (1852) of a specimen from the Miocene basin of Vienna, and which also (*vide* Sacco) is closely allied to Dujardin's type. This latter name is not preoccupied. *Cypræa hörnesi*, Neugeboren (1854, Zeitschr. Deutsch. Geol. Ges., v, p. 675), is a *nomen nudum* proposed for a species never afterwards described under this name; *Gisortia hörnesi* (not *hoernesii*), Lefèvre (1878), is an *Ovula* and not *Cypræa*.

Cypræa globosa, Sow. (1840), was changed to *C. globularis* by Edwards in 1854.

CYPRÆA LISTERI, Gray (1825).

Gray described two *Cypræa* under this name. First, in 1824 (Zool. Journ., i, p. 384) a variety of *C. felina*, now considered a species or, at least, a subspecies (= *melvilli*, Hid.), then in 1825 (op. cit., i, p. 507) a species belonging to the group of *C. erosa*, Linn., and identical with *C. marginalis*, (Sol. MSS.), as pointed out by Dillwyn (1827, Zool. Journ., iii, p. 317). *Cypræa marginalis*, (Sol. MSS.) Dill., must therefore take the place of Gray's name.

CYPRÆA LYNX, Linnæus (1758).

Cypræa vanelli, Linn. (1758, p. 720), is published one page before *C. lynx* (p. 721). Lamarck (1810) believed at first the former to be his *C. turdus*. Gray (1824) recognized its true synonymy, = *lynx*, which is afterwards confirmed by Hanley (1855). Notwithstanding the antedating by one page, the well-known name, *C. lynx*, Linn., I think should be retained.¹

CYPRÆA MADAGASCARIENSIS, Gmelin (1790).

This name must not be changed to *honoluluensis*, as Melvill (1888, p. 245) proposed, but must remain, in spite of the erroneous locality implied, and *honoluluensis* becomes a synonym.

CYPRÆA MARGARITA, Gray (1828).

Gray (1825, Zool. Journ., i, p. 516) described a species as *C. margarita*, which he afterwards regarded (1828, op. cit., iv, p. 87) as a young shell of *C. cicercula*. On the same page he then described another species as *C. margarita* (as of Humphreys), believing presumably that this name was now available. It is clear that the name of the latter species, which has neither synonyms nor named varieties, must be changed. I propose *Cypræa dillwyni*, n. nov. nom. This author had already described in 1817 a *C. margarita* which is

¹ This view is not in accordance with the International Rules on Zoological Nomenclature, and if synonymous *C. vanelli* should be substituted for *C. lynx*.
—H. O. N. S.

identical with *C. margarita*, Gray (1825 nec 1828), and *C. margarita*, Wood (1828).

CYPRÆA MELVILLI, Hidalgo (1906).

Cypræa ursellus, Gmel. (1790), is a decorticated shell of *C. hirundo*, Linn., but *C. ursellus*, Kiener (1845, non Gmelin), is a good species, or, at least, a subspecies, of *C. felina*; the latter therefore had been changed by Hidalgo (1906) into *C. melvilli*, and Shaw (1909) accepted this name. But this *Cypræa* had been described already by Gray (1824, Zool. Journ., i, p. 384) as *Cypræa felina*, var. *listeri*. Therefore *C. listeri* must supersede *C. ursellus*, Kien., and *melvilli*, Hid. (see note under *C. listeri*, Gray).

CYPRÆA MINOR, Grateloup (1845).

Orbigny (1852, Prodr. Paléont., iii, p. 48) changed *C. ovum*, Grat. (1845, Conch. foss. bassin Adour, tab. 40, fig. 1), into *C. subovum*, for this name was preoccupied by Gmelin (1790, = *errones*, Linn., var.). Sacco (1894, p. 10) pointed out that the name *minor*, given by Grateloup to a variety of his *ovum* (op. cit., tab. 40, fig. 16), has priority. I prefer to retain *C. subovum*, for Grateloup had already described a *C. annularis* var. *minor* as fig. 10. Cossmann (1903) cited this species erroneously as *C. ovum*, Grat.

CYPRÆA OBESA, Deshayes (1866).

Hidalgo (1906, pp. 50, 158) cites a *Cypræa obesa*, Carpenter (1857, Rep. pres. state of knowl. Moll. West Coast of North Amer., p. 235), the description of which he did not see. He had possibly seen the Index of Carpenter's "The Moll. of Western North America" (1872), where on p. 45 a *Cypræa* is called *obesa*. But this is evidently an error in Carpenter's manuscript, for in the treatise which Hidalgo did not know (to be found in Rep. Brit. Assoc. Adv. of Sci., 1856, not 1857), Carpenter, after a list of *Cypræa*, enumerates a *Cancellaria obesa*, Sow., while there is no *Cypræa* of this name. *C. obesa*, Carp., is therefore a *nomen nudum*, and *C. obesa*, Desh., may remain.

CYPRÆA OBTUSA, Perry (1811).

I agree with Hidalgo's opinion (1906, p. 178) that *Cypræa vinosa*, Gmelin (1790, Syst. Nat., 13th ed., p. 3421), is really identical with the species afterwards called *guttata*, Lam. (1810), *pantherina*, Dill. (1817), *tigrina*, Lam. (1822), or *pardus*, Mörch (1852). Shaw (1909, p. 301) doubted this, and proposed the name *C. obtusa*, Perry (1811, Conchology, tab. 19, fig. 1), for *C. pantherina* as being given six years earlier. Unfortunately this name had been given to the rather rare dark-chestnut variety (= *theriaca*, Melv.), which would rank as a species, while the more common whitish shells would be considered as a variety. Moreover, the word *obtusa* is not quite fitting. Compared with its closely allied *C. tigris*, Linn., *C. obtusa* is more slender, its extremities are attenuated, produced, and

often recurved up, but never obtuse, as it is in *C. tigris*; the description of this latter species given by Linnæus twice contains the word "*obtusa*"!

I contend that *C. vinosa* is identical with *C. pantherina*; Gmelin, in describing it, says:—

"*C. testa supra ex albo vinosa*"—many specimens of the extremely variable species are suffused with a slightly reddish or rose colour, which never happens in *C. tigris*.

"*Ocellis purpurascens circulo nigro cinctis*"—the author wanted to describe the dark, often bluish-shaded, spots, as in *C. tigris*.

"*Lineaque horizontali alba*"—regarding the figure cited (Bonnani, *Recreatio*, iii (1684), fig. 253), it is clear that Gmelin intended to mention the whitish dorsal line.

"*Intus cærulea.*"

"*Habitat in mari mediterraneo*"—this habitat does not prove that my opinion is false; *C. pantherina* is the largest *Cypræa* living in the Red Sea, therefore its shell was well known to the ancient Egyptians, Greeks, and Romans, and was spread by them to all the peoples inhabiting the shores of the Mediterranean Sea and beyond. One must not, therefore, wonder that Gmelin believed it to live in the Mediterranean, as was held by some conchologists almost a century later regarding *C. moneta*, *annulus*, etc.

"*Testæ margine niveo*"—the spots disappear on the margin, for it is pressed down towards the flattened base of the shell; in *C. tigris*, on the contrary, the base is more rounded, the margin therefore is displaced towards the dorsum, and lies still in the zone of the big marginal spots.

The figure of Bonnani, cited by Gmelin, shows a specimen of *C. pantherina* very well, and I do not understand how Shaw could call it "practically useless". It could scarcely be taken for *C. lynx*, Linn., for the spots are all of the same size. Gmelin also did not mention the red interstices between the teeth, so characteristic of the latter species.

Therefore there is no doubt, I think, that *Cypræa vinosa*, Gmel., must stand, *C. obtusa*, with its synonym *C. theriaca*, Melv., becoming a variety.

CYPRÆA PRESTONI, Shaw (1909).

Cypræa interrupta, Gray (1824), was changed by Shaw into *C. prestoni*, nov. nom., as being preoccupied by *interrupta*, Bolten (1798). But it was superfluous to create a new name, for there is a variety of it, *C. rhinoceros*, Souverbie (1865, *Journ. de Conch.*, xiii, p. 156), and this name must be used to designate this species. *C. interrupta* becomes a variety the synonym of which is *prestoni*.

The name *rhinoceros* is not unsuited to this species, for there is always a callous thickening on the back of the anterior extremity, and very decorticated shells can easily be distinguished from *C.*

teres, Gmel. (= *tabescens* aut.), by it. But it is rarely so swollen as in the typical *C. rhinoceros*.

CYPRÆA PRISCA, Deshayes (1866).

Oliva prisca, Binkhorst (1861, Monogr. Gastr. Ceph. du Limbourg, p. 71), is perhaps a cretaceous *Cypræa*, as its author and Heilprin (1882, Proc. Ac. N. Sci. Philadelphia, p. 209) believed. If that should be confirmed by future investigation, it would be necessary to give a new name to Deshayes' species from the French Paleocene.

CYPRÆA ROSTRATA, Zekeli (1852).

Grateloup (1845) called a miocene shell *Cypræa columbaria*, var. *rostrata*, which by future investigation will perhaps be proved to belong to *C. leporina*, Lam.; no author has afterwards cited it. Names given as varietal ones do not hinder their repeated use for other species of the same genus, if the former never were considered as species or subspecies, therefore the name of Zekeli's very interesting cretaceous *Cypræa* must not be changed.

CYPRÆA STERCORARIA, Linnæus, var. *RATTUS*, Lamarck (1810).

Long before Lamarck, the same variety was already described twice by Gmelin (1790, Syst. Nat., 13th ed.), first on p. 3405 as *C. conspurcata*. The type of Born's fig. 1 in his "Test. Mus. Cæs. Vindob." (1780), tab. 8, cited by Gmelin, is preserved in the Museum of Natural History in Vienna and agrees very well with Lamarck's description. Again, on p. 3413, Gmelin described a *C. nebulosa*, the identity of which with *C. rattus* was acknowledged by Gray (1824). The variety therefore must be called *conspurcata*, Gmel. *C. nebulosa*, Gmel., and *C. rattus*, Lam., are synonyms.

CYPRÆA VARIOLARIA, Lamarck (1810).

Gmelin (1790, Syst. Nat., 13th ed., p. 3421) described a *Cypræa chinensis* which was interpreted by many authors (Gray, Menke, Cuvier, Anton, Roberts, and Melvill) as a *C. lynx*, and by Hidalgo (1906) as a *C. variolaria*. Shaw (1909) contested its identity with the latter, holding it doubtful as Dillwyn (1817) had done. In this case I am of the same opinion as Hidalgo; Gmelin's description ("oblonga solida variegata; labiis aurantiis") and, above all, the cited figure (Argenville, Conchyl. (1772), tab. 18, fig. z), which is well recognizable, do not allow any other interpretation but that his specimen was a *C. variolaria*. *C. chinensis*, Gmel., therefore, should stand for this species.

TRIVIA AFFINIS, Dujardin (1837).

This species, described by Dujardin as a *Cypræa*, must receive another name, for Gmelin (1790) had called by this name a shell afterwards proved to be *C. globulus*, Linn. Following Sacco (1894), its var. *pseudoasulcata*, Sacco, should supply the preoccupied name. But future investigation may perhaps prove that other fossil *Trivia*

now considered as distinct must be united with it. Cocconi (1873) and Couffon (1902) believed *T. avellana*, Sow. (1823), not to be separable as a good species. Then a prior and, I hope, a shorter name will be found than *pseudoasulcata*, Sacco, for this species.

Cossmann (1903, p. 157) mentions a *Cypræa* (*Bernaya*) *affinis*, Duj.; it is surely only a slip, probably instead of *globosa*, Duj.

TRIVIA ARCTICA, Pulteney (1799).

This species was called by various writers *arctica*, Pult. (1799), or *arctica*, *pediculus* and *bullata*, Montg. (1803), *europæa*, Montg. (1808), or *coccinella*, Lam. (1810). Dautzenberg and Fischer (1912, Rés. camp. scient. Albert de Monaco, xxxvii, p. 168) wanted to prove that *arctica*, Humphreys (1797), must be taken to designate the species, but the eight words in his "Museum Calonnianum", p. 7, can never be regarded as a name or description, being non-binomial. The name *monacha*, Costa (1778, British Conchology, p. 33), also cannot be taken as valid, not on account of the designation "*pediculus seu monacha*", but because its author does not follow binominal nomenclature on pp. 12, 14, 120, 130, 133, and 238. Therefore *arctica*, Pult., must be retained as the name of this common European *Trivia*.¹ ? *pediculus* L. 1758

TRIVIA ATOMARIA, Dall (1902).

Hidalgo included this species as well as all other *Trivia* in the genus *Cypræa*. Though there is an older *Cypræa atomaria*, described by Gmelin in 1790, the name of Dall's species has to remain, for it is described as *Trivia*, and belongs, without doubt, to this genus.

TRIVIA LATHYRUS, Blainville (1826).

Formerly this species was well known under the name *Trivia pulex*, Gray (1827, Zool. Journ., iii, p. 368; 1828, which, as Shaw says, is incorrect). Shaw (1909, p. 311) pointed out that it was described as *Cypræa lathyrus*, Blainville, in 1826, and not for the first time in 1830; but he omitted that it had been called *Cypræa sulcata* var. D. (partim), and *Cypræa pulex* (Solander MSS.) by Dillwyn (1817, Descr. Cat., i, pp. 466, 467), which is preoccupied by *Cypræa pulex*, Bolten (1798, = ?). *Trivia lathyrus*, Blainv., therefore remains.

TRIVIA NIVEA, Sowerby (1832, 1837).

The name of this species, described as a *Cypræa*, is preoccupied by *Cypræa nivea*, Bolten (1798, = ?), *nivea*, Dill. (1817, = *Trivia oryza*, Lam.), *nivea*, Gray (1824, = *Cypræa eburnea*, Barn., or *turdus*, Lam., var.), *nivea*, Sow. (1825, = *Trivia oryza*, Lam.), and *nivea*, Wood (1828, = *C. lutea*, Gron., var.). Therefore it must

¹ The author of this paper appears to have overlooked the note by T. Iredale (Proc. Malac. Soc., XI, 1915, p. 333) on *Trivia jonensis*, Pennant. Iredale clearly proves that the correct name for this species should be *jonensis*, Pennant (Brit. Zool., 2nd 8vo ed., iv, 1777, p. 117, pl. lxxi, f. 8).—H. O. N. S.

be changed; the species having only one synonym, *scabriuscula*, Kien. (1845) nec Gray (1827), I propose *Trivia nix*, m. nov. nom.

TRIVIA PEDICULARIS, Deshayes (1844).

Deshayes (1844) changed his own *Cypræa* (now *Trivia*) *lamarckii*, described in 1836, into *pedicularis*, for Gray had used this word for a species in 1825; Sacco (1894, p. 50) had no right to again accept the former name, though at that time both belonged to distinct genera. Cossmann (1903 and 1911) cites this fossil species as *Trivia pedicularis*, Desh., which name must stand.

TRIVIA PULLA, Gaskoin (1846).

This species, which has no synonyms or named varieties, is described by Gaskoin as *Cypræa*. Therefore its name is preoccupied by Gmelin (1790, = *onyx*, Linn., var.) and must be changed. I propose *Trivia occidentalis*, m. nov. nom.

TRIVIA SCABRIUSCULA, Koenen (1890).

Koenen (1890, Abhandl. z. geol. Spezialkarte v. Preussen, x, pars. ii, p. 565) described a very small shell from the German Oligocene as *Trivia scabriuscula*, and it is evidently allied to the living *Cypræa childreni*, Gray, in having the anterior extremity carinately winged beneath. Cossmann (1903) cited it as *Pustularia*. Koenen did not observe that Gray (1827) had already given this name to a recent species of *Cypræa*, though afterwards always quoted as a *Trivia*. Therefore I propose *Cypræa liliputana*, m. nov. nom., for Koenen's species, which is evidently a good one; it seems that it connects the ribbed *C. childreni* with the pustulated *C. cicercula*.

TRIVIA SUBROSTRATA, Gray (1827).

Gray described two *Cypræa subrostrata*: one (1824, Zool. Journ., i, p. 369) is a fossil species of *Cypræa*, the other (1827, op. cit., iii, p. 363) is the recent *Trivia* from the West Indies. Obviously the second must be renamed. The var. *alba*, Roberts (1885, p. 201, as of Krebs, *ubi?*), scarcely belongs to this species, as Roberts himself says. Therefore, I propose for *Trivia subrostrata*, Gray (1827), *Trivia antillarum*, m. nov. nom.

The following notes may be of use to workers on this group, but, it is hoped, without giving rise to the thoughtless creation of many new names which future examination might prove to be superfluous.

GISORTIA.

depressa, Sow. (1840): Is described as a *Cypræa*, but must not be changed, for *Cypræa arabica* var. *depressa*, Gray (1824), never was considered a distinct species or good subspecies.

CYPRÆA.

attenuata, Johnson (1899): Preoccupied by *attenuata*, Edwards (1865).

- cancellata*, Edwards (1865): Preoccupied by *cancellata*, Gmelin (1790).
- cineta*, Martin (1899): Must not be changed, for *cineta*, Meuschen (1787), is not valid, and *cineta*, Sol. MSS., is cited by Dillwyn (1817) and all following writers as a synonym of *cinerea*, Gmel., therefore it was never established as a species.
- dalli*, Aldrich (1894): Preoccupied by *dalli*, Cossmann (1893); both belong to the subgenus *Cyprædia*, but come from different parts of the world.
- elongata*, Archiac and Haime (1853): Described as *Ovula* and scarcely belonging to *Cypræa*; preoccupied by *elongata*, Perry (1811), and *elongata*, Brocchi (1814).
- expansa*, Archiac and Haime (1853): Described as *Ovula*, but Mayer-Eymar (1904) believes it to be perhaps a *Cypræa*; preoccupied by *expansa*, Grat. (1845), which is described as var. of *annulus*, now considered as var. of *fabagina*, but by many authors (Sismonda, 1847, Archiac and Haime, 1853, etc.) as a distinct species.
- martini*, Schepman (1907): Preoccupied by *martiniana*, Anton (1839), though this species is now considered as = *gangranosa*, and is called after Martini, the author of the "Systematisches Conchyliencabinet", not after Martin, professor in Leyden.
- ovata*, Martin (1890): Preoccupied by *ovata*, Gmel. (1791), and *ovata*, Perry (1811).
- prælonga*, Bellardi (1852): Must not be changed, for *leporina* var. *prælonga*, Grat. (1845), never was considered to be of specific rank.
- retusa*, Parona (1909): Preoccupied by *Trivia retusa*, Sow. (1823), which was described as a *Cypræa*.
- rugosa*, Grat. (1845): Preoccupied by *rugosa*, Brod. (1827), which is probably a *Cyprædia*.
- smithi*, Aldrich (1886): Preoccupied by *smithi*, Sow. (1881), which, in a postscript, is considered by the author as a variety of *pyriformis*, Gray. *Trivia smithi*, Martin (1883), must not be changed on account of its being described as *Trivia*.
- striata*, Zekeli (1852): A dubious Cretaceous species, described as *Ovula* and perhaps allied to *Cypræa ventricosa* (Reuss), Orb.; it is preoccupied by *striata*, Gmel. (1790), which = *helvola*?
- subcylindrica*, Sow. (1870): Scarcely a good species. This name was given by Gray (1828) to a variety of *leporina*.
- vaughani*, Maury (1913): Preoccupied by *vaughani*, Johns. (1899).

TRIVIA.

- grayi*, Michel. (1847): It is described as *Cypræa*, and therefore preoccupied by *grayi*, Kien. (1845), which is = *achatidea*.
- intermedia*, Kien. (1845): Described as *Cypræa*, but not being admitted as a good species must not be changed, for *intermedia*,

Gray (1824), was described as var. of *arabica*, and can be regarded neither as a species nor a subspecies. *Intermedia*, Redfield (1847), described as var. of *reticulata*, is not quite identical, and also contains *arabica* subsp. *gillei*. *Reticulata* var. *intermedia*, Roberts (1885), is a synonym of *gillei*. *minor*, Grat. (1845): Described as a variety of *Cypræa spæriculata*, is raised to the rank of a distinct species by Sacco (1894); it is preoccupied by two varietal names given by its author (see note on *Cypræa minor*, Grat.).

I add to the preceding list three names, the older homonyms of which are the result of typographical mistakes and can scarcely hinder the validity of the following.

C. amygdalina, Grat. (1845): This spelling was not used by Brocchi, and is perpetrated only once by Brongniart (1823) instead of *amygdalum*, Broc.; but Brongniart also wrote *amygdalum* correctly.

C. lucida, Grat. (1847): *Lucida*, Linn., cited by Blainville (1830), is evidently printed by error instead of *C. lurida*, Linn.

C. pumila, Koenen (1890): *Pumila* is wrongly written by Weinkauff (1881) instead of *pumilio*, which is the name given by Brusina to a new species of *Voluta*, now considered to be a young shell of *Cypræa*.

II. ON SOME VARIETAL NAMES GIVEN BY GRAY.

The first "Monograph on the Cypræidæ" was published by J. E. Gray in seven parts, which were issued as follows:—

- | | | | |
|------|------------------------|------------|------------------------------------|
| (A.) | Zoological Journal, i, | pp. 71–80, | 1824 (March). |
| (B.) | " | " | i, pp. 137–152, 1824 (June). |
| (C.) | " | " | i, pp. 367–391, 1824 (October). |
| (D.) | " | " | i, pp. 489–518, 1825 (January). |
| (E.) | " | " | iii, pp. 363–370, 1827 (November). |
| (F.) | " | " | iii, pp. 567–576, 1828 (April). |
| (G.) | " | " | iv, pp. 66–88, 1828 (July). |

These are abbreviated in this paper by the letters A.—G., which, in conjunction with a figure and page, will make it easy to find the original passage in any of the above three volumes.

Gray described in this monograph 127 species of recent and fossil *Cypræa*, some of which now belong to the genera *Trivia* and *Gisortia*. Of these, thirty-eight were new species as stated by Gray. He also described the young, incomplete, and decorticated shells of most of the species, and many colour, shape, and size varieties.

Since Sowerby (1832–7, Conchological Illustrations), subsequent authors have cited the varieties described by Gray as ". . ., var. Gray", as if being nameless in his monograph; but I venture to point out that Gray called many by proper varietal names. Only one previous writer was of the same opinion as myself, Redfield (1847, Ann. Lyc. Hist. Nat. New York, iv, p. 477, etc.), but he mentioned only the varieties of *Cypræa arabica*, and therefore

introduced only two of Gray's varietal names, *C. arabica* var. *intermedia* and var. *depressa*.

Two of Gray's varietal names were afterwards used for designating the same shells, but raised to specific value.

Cypræa algoensis β . *edentula* is identical with the shell described as "*Cypræa edentula nobis*" by Sowerby in 1837 (Conch. Illustr., Cat. *Cypræa*, p. 10). Gray's words, "with the teeth more or less obliterated," cited by Sowerby, are not found in the Zool. Journ. (D. 498); they must be taken from Gray's "Descr. Cat." (1832, only a manuscript work!), where *edentula* must have been cited only as "*algoensis* var." (without any name). The name given by Gray was, I presume, well known to Sowerby, and he therefore used it, but he was right to add "*nobis*", for he raised the name previously suppressed by its first author, Gray, to specific rank.

Cypræa pediculus β . *suffusa* (E. 370) is identical with *Cypræa* (now *Trivia*) *suffusa* of Gray's "Descr. Cat." and of Sowerby's "Conch. Illustr." (1832, fig. 41) and his "Cat. rec. sp. *Cypræa*" (1837, p. 13). Contrary to *edentula*, the name given to the variety *suffusa* in 1827 was adopted by its author in 1832 as of specific rank, and subsequently by Sowerby and all later writers.

Gray's named varieties are as follows:—

CYPRÆA.

C. MAPPA, Linn., var. *ROSEA*, Gray (1824).

A. 75.—The description and Sowerby's figure prove it to be the same as var. *subsignata*, Melv. (1888), which latter becomes a synonym of var. *rosea*. Born's figure represents quite another shell, which is allied to var. *panerythra*, Melv.

C. ARABICA, Linn., var. *INTERMEDIA*, Gray (1824).

A. 77.—A slight variety of the typical *arabica*, to be distinguished by the thickened margin and the dorsal markings; it connects *arabica*, s. str., with its subsp. *reticulata*, Martyn.

C. ARABICA, Linn., var. *HISTRIO*, Meuschen (1787).

A. 77.—Gray's variety contains two subsp. of *arabica* now considered as distinct, viz. *histrion* (Meusch.), Gmel. (1790), and *reticulata*, Martyn (1789).

C. ARABICA, Linn., var. *DEPRESSA*, Gray (1824).

A. 77.—A slight variety of *arabica*, subsp. *histrion*, Gmel.; it agrees with it by the shape, the straight aperture, and the similar drawing on the back of the shell; but the thickened margins remind one of subsp. *reticulata*, Martyn. *C. arabica*, subsp. *gillei*, Jouss., has the anterior extremity very broad and almost square, but *depressa* is attenuated and triangular.

C. STERCORARIA, Linn., var. *RATTUS*, Lam. (1810).

A. 80, B. 137.—To be now known as *stercoraria* var. *conspurcata*, Gmel. (1790) (see note on *C. stercoraria*).

C. EXANTHEMA, Linn., var. ANGUSTATA, Gray (1824).

B. 139.—A slight variety of *C. zebra*, Linn. (= *exanthema*, Linn.), being a little more cylindrical, the white spots not so large as in typical specimens, but also ocellated. It seems to be an intermediate variety connecting *zebra* with its subsp. *cervinetta*, Kien. No wider aperture being mentioned, it must be placed with the typical *zebra* and not with *cervinetta*. I have had no opportunity of seeing the figure in Favanne's "Conchyliologie" (tab. 29, fig. B, 1), cited by Gray.

C. ARGUS, Linn., var. VENTRICOSA, Gray (1824).

B. 141.—This variety is described by Hidalgo (1907, Mon. gén. *Cypræa*, p. 270) as *argus* var. 1. The slight difference in colour can be neglected.

C. ISABELLA, Linn., var. FULVA, Gray (1824).

B. 142.—This variety is not identical with var. *fulva*, Rous (1905, The Nautilus, xix, p. 77), but being fulvous as well as pellucid, it connects *fulva*, Rous, with var. *limpida*, Melv. (1888, Mem. Proc. Manchester L. Ph. Soc., (4) i, p. 231).

C. LURIDA, Linn., var. MONSTROSA, Gray (1828).

G. 72.—Not a variety, but a monstrosity of *C. lurida* and not of *C. pulchra*, Gray (see Hidalgo, 1906, Mon. gén. *Cypræa*, p. 176); it is a synonym of *kunthii*, Audouin (1827, in Savigny, Descr. Egypte, xxii, p. 190), which was described as a species, but unknown to Gray, in 1828. Both names were established on the same specimen of *lurida*, figured by Savigny ten years before (1817, Mem. Coq. Egypte, tab. 6, fig. 27).

C. CINEREA, Gmel., var. FULVA, Gray (1824).

B. 145.—A slight colour variety, the interstices between the teeth of which are colourless, as it was in the shell described by Gmelin. Hidalgo's *cinerea*, which has reddish interstices between the teeth, must be considered as a variety, though most adult shells belong to it. Gray's *cinerea*, s. str., which has the margins sprinkled with black, also belongs to a common variety, while his var. *fulva*, having white margins, was perhaps not quite full grown.

C. CINEREA, Gmel., var. SUBFOSSILIS, Gray (1828).

G. 72.—No description is given, only the manuscript-name *C. eburnea*, König, is added as a synonym. This shell must be left as dubious, but it scarcely belongs to *cinerea*, which is found in fossil condition only in Costa Rica (Roberts, 1885, in Tryon, Man. of Conch., vii, p. 166) and in the Bahama Islands (Dall, 1905, Fossils of the Bahama Isl., p. 26). König's shell was found, I suppose, in Europe, probably in the British Tertiary, and might have been a (young?) *Bernaya*, sp.

C. LEPORINA, Lam., var. SUBLONGA, Gray (1828).

G. 73.—A little larger, but otherwise identical with Gray's typical shell, which was described on B. 149 as *C. gibbosa*, nov. sp.; *sublonga* may be considered as a synonym of *leporina*.

C. LEPORINA, Lam., var. SUBCYLINDRICA, Gray (1828).

G. 73.—This shell was, I presume, an almost cylindrical specimen of *leporina* var. *sublyncoides*, Brongniart (1823), which was unknown to Gray; *lyncoides* often has the extremities somewhat produced.

C. LEPORINA, Lam., var. MINOR, Gray (1828).

G. 73.—Gray's shell belonged without doubt to *C. leporina*, s. lat., for he particularly described the concavity of the columella (Gray forgot to give the size of the shell!); *C. annularia*, Brongn. (1823), which is cited as a synonym of it, though Gray did not know its description, is not identical, but belongs to quite another group (= *C. fabagina*, Lam., var.). *C. minor*, Gray, and *annularia*, Gray (nec. Brongn.), may be considered as synonyms of *leporina*.

C. DILUVIANA, Gray, var. MINOR, Gray (1824).

B. 149.—This is a synonym of *C. fabagina*, Lam., while *diluviana*, s. str., may be considered not as a synonym of it (as most authors have believed), but as a variety of abnormal size (45 mm. !); it surely belongs to *fabagina* and not to its subsp. *amygdalum*, Broc.

C. TIGRIS, Linn., var. FLAMMEA, Gmel. (1790).

C. 367.—Must be considered as a synonym, not as a variety, on account of its being an incomplete shell; it was considered as such by Schröter (1783, Einleitung, p. 148, No. 52).

C. TIGRIS, Linn., var. NIGRESCENS, Gray (1824).

C. 367.—This rather rare variety was called *russonitens* by Melvill (1888, Mem. Proc. Manchester L. Ph. Soc., (4) i, p. 212), and also perhaps *athiops*, though a *nomen nudum* by Orbigny (1847, Dict. d'hist. nat., x, p. 433). This name was used already by Menke (1830, Synops. Mus. Menkean., p. 81), but not as varietal name. Both become synonyms of var. *nigrescens*, Gray.

C. PANTHERINA, Sol., var. β , Gray (1824).

C. 368.—This variety is the same as *C. vinosa*, Gmel., var. *obtusa*, Perry (1811), and *theriaca*, Melv. (1888). *C. obtusa* is not mentioned in Gray's monograph. There is a fossil variety of *C. vinosa* named *fossilis* by Sacco (1894).

C. ONYX, Linn., var. FULVA, Gray (1828).

G. 76.—Although described as pellucid, this variety may be considered as identical with *onyx* var. *carnicolor*, Mörch (1852, Cat. Conch. Yoldi, p. 116); the citing of Reeve's figure (1845, Conch. icon., *Cypræa*, fig. 39b) suffices to establish it. In Jay's Cat. of Shells,

3rd ed. (1839), it is a *nomen nudum*. It is placed with *nymphæ*, Sow. (1870, Thes. Conch., *Cypræa*, fig. 212). In Jay's Cat. of Shells, 4th ed. (1850), it is cited as a *nomen nudum* instead of *carnicolor* (!), but the latter is a little more whitish-rose than fulvous. Both names may be considered in future as synonyms of var. *fulva*, Gray.

C. PYRUM, Gmel., var. FOSSILIS, Gray (1824).

C. 371.—Sacco (1894, Moll. terr. terz. Piem., xv, p. 25) cited *pyrum* (Gmel.), Gray (Sacco quoted 1825), as a synonym of *C. porcellus*, Broc. Lamarck's fossil *C. rufa*, which is identical with Gray's var. *fossilis* as its author stated, therefore adding no further description, was considered by Sacco (p. 26) as a synonym of *porcellus* var. *plioglobosa*, Sac. Gray's variety without doubt belongs to this species. I do not, however, recommend the use of this name in place of *plioglobosa*, for their identity is not fully established.

C. ASELLUS, Linn., var. FLAVESCENS, Gray (1824).

C. 375.—This name must be given to Hidalgo's var. 1 of *asellus* (1907, Mon. gén. *Cypræa*, p. 274), but many specimens assigned to this variety with reddish or yellowish bands are only decorticated, I think. Two of the three figures cited by Gray, viz. the ones drawn by Gualtieri, probably belong to *C. felina*, Gmel., or *hirundo*, Linn., but certainly not to *asellus*.

C. HIRUNDO, Linn., var. FORMOSA, Gray (1824).

C. 377.—This varietal name must be considered as a synonym of *C. cylindrica*, Born (1778). Lamarck described this shell as *hirundo* var. (nameless), for he did not know the name given by Born. Gray copied Lamarck's description (omitting the indication of size) and called the variety *formosa*, though he knew Born's species and described it some pages later as *Cypræa cylindrica*. One must not wonder that Gray described the same species twice, for he only saw two specimens of *cylindrica*, as he himself said—one specimen a long time before he wrote his monograph, and another, decorticated, at the time he was writing it.

The name given by Gray does not touch the validity of *Cypræa* (now *Trivia*) *formosa*, Gask. (1835), for Gray's *formosa* was published as a variety and never considered as a specific name.

C. HIRUNDO, Linn., var. PULCHELLA, Gray (1828).

G. 78.—This is the shell afterwards called by Sowerby (1837, Cat. rec. spec. *Cypræa*, p. 6) *Cypræa hirundo* var. *oweni*, which is now considered a good species. But its name must remain *C. oweni*, for *pulchella* is preoccupied by Swainson (1823) and Gray himself (1824) for other species.

C. PUNCTATA, Linn., var. DECOLORATA, Gray (1824).

C. 380.—This variety must be placed among the synonyms of *punctata*, s. str., for it also has short whitish teeth, as they were in Linnæus' type (1771, *Mantissa plant.*, ii, p. 548; 1767, as quoted by Hidalgo, is incorrect!). Gray's *punctata*, s. str., having the teeth reddish and extended somewhat over the base, is a nameless variety, though it is considered by many authors as the typical shell.

C. PUNCTATA, Linn., var. MACULATA, Gray (1824).

C. 380.—Such a variety has never appeared again; perhaps it was like Sowerby's fig. 281 in his "Thes. Conch., *Cypræa*" (1870), or maybe it belonged to quite another species (a decorticated *C. fuscomaculata*, Pease?). It is a doubtful shell, and the name could never be applied to a species, being preoccupied by Perry (1811).

C. CRIBRARIA, Linn., var. Gray (1828).

G. 79.—On account of the comma in the description (see above), I take it for nameless; Gray's shell might have been a *C. esontropia*, Ducl.

C. FELINA, Gmel., var. GIBBOSA, Gray (1824).

C. 384.—It may be considered as a variety of *C. felina*, subsp. *fabula*, Kien. (1845), which is described by its author as "peu convexe en dessus", while Roberts' (1885) *fabula* is identical with Gray's variety. The name *gibbosa* cannot designate the subspecies, being preoccupied by Borson (1820).

C. FELINA, Gmel., var. LISTERI, Gray (1824).

C. 384.—This variety is identical with *ursellus*, Kien. (1845) nec Gmel. (1790), and therefore also with *melvilli*, Hid. (1906); the name given by Gray must be used for this shell, but reduced to the rank of a subspecies of *C. felina*.

C. listeri, Gray (1825, D. 507), which belongs in the group of *C. erosa*, must be changed to *C. marginalis*, Dillw. (1827).

C. ERRONES, Linn., var. OVATA, Gray (1824).

C. 385.—Becomes a synonym of *errones*, subsp. *ovum*, Gmel. (1790), which is more pyriform, more gibbous, thickened on the margins, the callosity of which extends high up on the dorsum, and has orange interstices between the teeth, but never spots on the back or on the anterior extremity. It was described by Brazier (1877) as *C. sophiæ*.

C. ERRONES, Linn., var. BIMACULATA, Gray (1824).

C. 385.—This name must be used for typically shaped shells of *C. errones*, s. str., which have the base and the margins yellow, but the aperture whitish; there are two blackish spots on the anterior extremity. It is figured by Sowerby (1837, *Conch. Illustr.*, fig. 132),

whose *errones*, s. str. (fig. 129), belongs to another variety; it is identical with *bimaculata*, but has no spots on the anterior extremity, and is also allied to var. *chrysophæa*, Melv.

C. MONETA, Linn., var. ROSEA, Gray (1828).

G. 82.—A very striking variety which has never been described afterwards. It is fleshy white, with two reddish purple bands. It can hardly have been a decorticated shell, for Gray always recognized such specimens.

C. OBVELATA, Lam., var. VITELLUS, Gray (1825).

D. 493.—I doubt whether this fulvous variety really belonged to *C. obvelata*, which I consider to be a subspecies of *C. annulus*, Linn., while *C. moneta* is, I think, quite separable. Its margins are described as somewhat depressed. I possess pinkish orange specimens which are intermediate between *annulus* and *obvelata*, and otherwise agree with Gray's description of his *vitellus*. It may perhaps be allied to *moneta* var. *aurea*, Shaw (1909), which also comes from the South Seas.

C. ANNULUS, Linn., var. FOSSILIS, Gray (1828).

G. 83.—It is identical with *C. fabagina* var. *brocchii*, Desh. (1844), but being preoccupied by two fossil varieties of Gray (C. 371, D. 496), I do not recommend the use of Deshayes' well-known name.

C. MUS, Linn., var. TUBERCULATA, Gray (1828).

G. 83.—This is the heavy shell with one or two tubercles on the back, afterwards called by Sowerby (1870, Thes. Conch., *Cypræa*, fig. 321) var. *bicornis*, which name therefore becomes a synonym of *tuberculata*.

C. MUS, Linn., var. FOSSILIS, Gray (1825).

D. 496.—This shell is identical with Lamarck's fossil *C. mus*, I presume, as Gray cited it from "Fiorenzola in Plaisantin, Lamarck"; therefore it belongs to *C. porcellus*, Broc., var. *pseudotypica*, Sacco (1894, Moll. terr. terz. Piem., xv, p. 25).

C. ALGOENSIS, Gray, var. EDENTULA, Gray (1825).

D. 498.—This is the well-known shell which was believed by all previous writers to have been named *edentula* by Sowerby (1832 and 1837). It is a distinct species or at least a good subspecies of *C. algoensis*, for I do not know of any intermediate specimens which might link up *algoensis* to *edentula*. On the contrary, in the collection of shells brought by Dr. Penther from Port Alfred (South Africa) and preserved in the Museum of Natural History in Vienna, there are many hundred *edentula*, a few of which have slight indications of teeth on the anterior part of both lips, but all are quite different from the true *algoensis*, which is not represented in this large collection from South Africa.

C. SPURCA, Linn., var. ELLIPTICA, Gray (1825).

D. 501.—This name must take the place of var. *elongata*, Dautzenberg & Fischer (1906, Rés. camp. scient. Albert de Monaco, xxxii, p. 40), if one considers such slight modifications to be varieties.

C. EROSA, Linn., var. INOCELLATA, Gray (1825).

D. 504.—It connects the typical *erosa* with its var. *phagedaina*, Melv. (1888, Mem. Proc. Manchester L. Ph. Soc., (4) i, p. 223), for the dark eyes in the white dorsal spots are almost absent, as well as the large dark square spot on each margin.

C. EROSA, Linn., var. Gray (1828).

G. 84.—Gray cited Sowerby's description from "Tank. Cat." (1825, p. 84), but the words "sub-albida", printed instead of "subtus albida" by mistake, made Gray's description quite obscure. There is a large open space after the "var."—perhaps Gray intended giving a name to this variety resembling var. *nebrites*, Melv. (1888), but did not do so.

C. OCELLATA, Linn., var. BRUNNEA, Gray (1825).

D. 505.—This variety is cited without any name by Hidalgo (1907, Mon. gén. *Cypræa*, p. 449) as *ocellata* var. 1; it seems that it has not been found since Gray's time. Its sides and base are darker than in typical shells, and therefore it is somewhat allied with var. *calopthalma*, Melv. (1888).

C. LAMARCKII, Gray, var. INOCELLATA, Gray (1825).

D. 508.—Must be considered as a synonym of *C. miliaris*, Gmel. (1790), which was not treated in Gray's monograph as a species, but mentioned as a synonym of *C. erosa*, Linn., of *lamarckii* var. *inocellata*, Gray, and of *listeri*, Gray (= *marginalis*, Dillw.), according to the three figures cited by Gmelin. But Shaw (1909, Proc. Mal. Soc. London, viii, p. 300) was right, I think, in upholding the validity of the name proposed by Gmelin for the species closely allied to *C. lamarckii*.

C. LAMARCKII, Gray, var. β , Gray (1828).

G. 85.—Was it also = *miliaris*, Gmel.? Its description is very short and dubious.

C. LAMARCKII, Gray, var. γ , Gray (1828).

G. 85.—Appears to be a variety of *C. miliaris*, Gmel.; it might belong to its var. *diversa*, Kenyon (1902, Journ. of Conch., x, p. 184), a synonym of which is var. *nivea*, Preston (1909, The Nautilus, xxii, p. 121); var. *intermedia*, M. Smith (1913, The Nautilus, xxvii, p. 69), connects it with the typical shell.

C. STAPHYLÆA, Linn., var. LIMACINA, Lam. (1810).

D. 513.—Is the shell described by Lamarck as *C. limacina*. I consider it a subspecies of *C. staphylæa*, though Troschel found both quite distinct as regards their radulæ, but he examined only one specimen of *limacina*, which may have been abnormal.

C. STAPHYLÆA, Linn., var. ATRATA, Gray (1825).

D. 513.—Though this variety having black extremities is not mentioned in Hidalgo's monograph, it cannot belong to any other species; specimens with somewhat darker extremities do exist (cf. Sowerby, 1870, Thes. Conch., *Cypræa*, fig. 228).

C. CICERCULA, Linn., var. TIMORENSIS, Gray (1825).

D. 515.—It is no variety, but only a young shell of *C. cicercula*; Gray also put a “?” before its name.

The following species now belong to the genus *Trivia* :—

C. SCABRIUSCULA, Gray, var. MINOR, Gray (1827).

E. 364.—Described as ovate-oblong, subrostrate, and only 5×2.5 mm. in size. I cannot place this shell; was it perhaps a *T. insecta*, Migh. ?

C. EUROPÆA, Mont., var. IMMACULATA, Gray (1827).

E. 366.—“Testa immaculata alba.” It may be considered as identical with the typical *T. arctica*, Pult., as the added synonym *arctica*, Mont., proves. Considering only the description and the other synonym, *pediculus (anglica)*, Linnæus, one could take it as identical with the pure white variety described by Dautzenberg and Fischer (1912, Rés. camp. scient. Albert de Monaco, xxxvii, p. 168) as var. *alba* (as if by Hidalgo).

C. QUADRIPUNCTATA, Gray, var. IMMACULATA, Gray (1827).

E. 368.—It is described by Hidalgo (1907, Mon. gén. *Cypræa*, p. 496) as the nameless var. 3 of *T. quadripunctata*.

C. PEDICULUS, Linn., var. SUFFUSA, Gray (1827).

E. 370.—Identical with *Cypræa (Trivia) suffusa*, Sow. (1832, 1837); Gray and not Sowerby must in future be credited as author of this good species.

C. AVELLANA, Sow., var. MINOR, Gray (1828).

F. 568.—It may, I think, be a variety of *T. affinis*, Duj. (1837), for its ribs are close and slender; its length is 15 mm. The word *minor* cannot rank as the specific name, for its identity with *T. affinis* is very problematical.

C. CARNEA, Gmel., var. OBLONGA, Gray (1828).

F. 569.—A very slight variety of *Trivia costata*, Gmel.; its shape is more oblong than globular.

The following species now belongs to the genus *Cypræa*, subgenus *Cyprædia* :—

C. DACTYLOSA, Lam., var. *GEORGII*, Defr. (1826).

F. 574.—This variety must be considered as a synonym of *C. gervillii*, Sow. (1820, Genera rec. foss. Shells, fig. 8), which is probably a variety of *Cypræa (Cyprædia) sulcosa*, Lam. (1802). (*C. dactylosa*, Lam., a synonym of *sulcosa*, is described in 1810!) Gray's description agrees very well with Sowerby's figure, which is also cited as representing *georgii*, while the name *gervillii* is put by mistake among the synonyms of *C. dactylosa*, s. str.
